

Appendix B

Rhode Island Wetlands Priority Plan

Policy: *Rhode Island will protect, preserve, and restore its wetland resources to conserve their ecologically and socially valuable functions.*

Wetlands perform critical functions including purifying and maintaining groundwater supplies, flood and stormwater control, erosion and sedimentation control, fish and wildlife habitat, nutrient production and cycling, open space, educational and scientific research opportunities, and under appropriate circumstances, substantial recreational opportunities. These valuable functions have been recognized in Rhode Island and federal law through regulatory programs and other measures designed to provide protection for wetlands. Avoiding the loss and degradation of wetlands, and restoring previously degraded wetlands, remains an environmental issue of national and state significance.

Rhode Island's freshwater swamps, marshes, bogs, ponds, lakes, reservoirs, and almost 1,500 miles of rivers and streams attract an assortment of recreational enthusiasts including kayakers, canoeists, swimmers, and fishers as well as motor boaters and jet skiers, bird watchers, hikers, and photographers.

The federal Emergency Wetlands Resources Act of 1986 authorizes federal funds, including the Land and Water Conservation Fund, for wetlands acquisition. This statute also, directs the U.S. Fish & Wildlife Service and each state to prepare a Wetlands Priority Plan to guide protection efforts. State plans are to be included as part of their SCORP and are to identify wetland types or areas to be given priority for protection through acquisition programs. Rhode Island's Wetlands Priority Plan was approved in 1988 by the National Park Service, and is updated and summarized in the remainder of this section.

Status of Wetlands in Rhode Island

Although a variety of wetland surveys have been conducted in Rhode Island since 1950, differing methods, objectives, and definitions limit the comparability of survey results. For example, the National Wetlands Inventory conducted in the early 1980's calculated approximately 65,000 acres of wetlands, the most recent (1995) RIGIS land use / land cover dataset reports approximately 90,000 acres classified as wetlands, and the 2002 *State of the State's Waters Rhode Island Section (305b) Report* lists over 127,000 acres of wetlands and deepwater habitats.

Urbanization, particularly along major river systems, has caused considerable modification to and loss of the state's wetlands. The continuing movement of population away from the urban centers towards coastal and inland rural communities poses the most significant threat to the state's wetland resources. No definitive data exists to establish the total quantity of wetlands that have been lost in Rhode Island through the effects of human activities. However, based upon a Connecticut study, studies conducted in other states, and for the nation as a whole, it is possible that Rhode Island has lost up to one-half of its original salt marshes through filling, drainage, and other development procedures. The forested swamps of Providence, Kent, and Washington Counties face the greatest potential impacts from continued population shifts and associated development. In addition to forested and other freshwater wetlands, the estuarine habitats of Washington County will remain under constant pressure from increasing development of surrounding uplands and tributary watersheds.

About 16 percent of the state's fresh and saltwater wetlands are protected through government or non-profit land protection programs. Over 18,000 acres of Rhode Island's wetlands are protected via public or conservation organization ownership: the federal government owns approximately 240 acres of wetland, the state owns approximately 10,900 acres, municipalities own approximately 4,500 acres, and non-governmental organizations own approximately 2,400 acres. A breakdown of ownership is illustrated in Table 152-B(1).

Table 152-B(1)
Acreage of Rhode Island's Freshwater Wetlands (by watershed and class of ownership)¹

<i>Watershed</i>	<i>Ownership</i>					<i>Total wetlands</i>	<i>Total protected</i>	<i>Percent protected</i>
	<i>Federal</i>	<i>State</i>	<i>Municipal</i>	<i>NGO*</i>	<i>Private</i>			
Blackstone River Basin	0	810	506	94	11,515	12,925	1,411	10.9
Blackstone and Millers Rivers Sub-basins	0	253	409	46	5,353	6,062	708	11.7
Branch River Sub-basin	0	169	0	38	1,722	1,929	207	10.7
Chepachet River Sub-basin	0	20	86	10	1,782	1,899	117	6.1
Clear River Sub-basin	0	368	11	0	2,658	3,037	379	12.5
Block Island Basin	0	10	7	4	508	529	21	4.0
Moshassuck River Basin	0	126	30	16	1,421	1,593	172	10.8
Narragansett Bay Basin	0	620	1,404	335	13,820	16,179	2,359	13.9
Annaquatucket River Sub-basin	0	35	118	13	916	1,082	166	15.3
Greenwich Bay Sub-basin	0	16	24	3	540	582	43	7.3
Hunt River Sub-basin	0	24	76	51	2,522	2,672	150	5.6
Kickemuit River Sub-basin	0	0	39	12	276	328	52	15.7
Maskerchugg River Sub-basin	0	8	0	0	516	524	8	1.5
Mount Hope Bay Sub-basin	0	0	8	9	391	408	17	4.1
Narragansett Bay Sub-basin	0	507	518	179	3,809	5,013	1,204	24.0
Providence River Sub-basin	0	13	127	19	781	939	158	16.8
Sakonnet River Sub-basin	0	18	491	49	4,054	4,612	558	12.1
Seekonk River Sub-basin	0	0	4	0	16	20	4	21.7
Pawcatuck River Basin	0	4,144	39	1,138	18,327	23,648	5,320	22.5
Chickasheen River Sub-basin	0	357	0	1	792	1,150	358	31.1
Chipuxet River Sub-basin	0	1,525	22	126	3,341	5,014	1,673	33.4
Pawcatuck River Sub-basin	0	2,169	16	177	11,267	13,629	2,362	17.3
Queen River Sub-basin	0	92	1	834	2,927	3,855	928	24.1
Pawtuxet River Basin	0	1,597	1,688	170	21,442	24,897	3,455	13.9

¹ This table was adapted from *Development of a Freshwater Wetland Restoration Strategy, Phase I: Site Identification and Prioritization Methods* (draft report) by Nicholas A. Miller and Francis Golet, Department of Natural Resources Sciences, University of Rhode Island.

Barden Reservoir Sub-basin	0	16	47	16	2,502	2,581	79	3.1
Big River Sub-basin	0	1,293	34	0	1,477	2,804	1,327	47.3
Flat River Reservoir Sub-basin	0	31	5	74	2,879	2,988	110	3.7
Moswansicut Reservoir Sub-basin	0	0	46	0	46	558	604	7.6
North Branch Pawtuxet River Sub-basin	0	54	172	42	268	1,268	1,536	17.4
Pawtuxet River Sub-basin	0	57	93	12	162	2,178	2,340	6.9
Pocasset River Sub-basin	0	136	191	0	327	1,497	1,823	17.9
Ponagansett Reservoir Sub-basin	0	0	0	0	0	323	323	0.0
Regulating Reservoir Sub-basin	0	0	156	10	166	1,641	1,807	9.2
Scituate Reservoir Sub-basin	0	0	897	5	903	4,727	5,630	16.0
South Branch Pawtuxet River Sub-basin	0	11	17	10	37	2,057	2,094	1.8
Westconnaug Reservoir Sub-basin	0	0	31	0	31	336	367	8.5
Pettaquamscutt River and Narragansett Shore	92	7	147	6	1997	2250	253	12.7
Point Judith Pond Basin	76	13	57	58	698	902	204	22.6
Quinebaug Basin (includes the Moosup River Sub-basin, Five Mile River Sub-basin, and the Pachaug River Sub-basin)	0	1,068	35	71	5,151	6,325	1,174	18.6
Saugatucket River Basin	0	14	97	52	2,233	2,396	162	6.8
Southeast Coastal Basin	0	4	61	110	3,774	3,949	175	4.4
Coastal Aquidneck Sub-basin	0	4	28	1	350	383	33	8.5
Little Compton Sub-basin	0	0	1	107	2,408	2,516	108	4.3
Westport River Sub-basin	0	0	32	2	1,016	1,050	34	3.2
Southwest Coastal Basin	72	52	3	157	1,473	1,756	283	16.1
Taunton River Basin	0	0	21	0	1,213	1,234	21	1.7
Ten Mile River Basin	0	36	284	38	210	568	358	63.0
Warren River Basin	0	4	80	17	757	859	101	11.8
Barrington River Sub-basin	0	0	74	2	142	219	76	34.8
Palmer River Sub-basin	0	0	0	9	215	224	9	3.9
Runnins River Sub-basin	0	0	6	0	242	249	7	2.6
Warren River Sub-basin	0	4	0	6	158	168	10	6.0
Wood River Basin	0	2,323	1	101	4,576	7,001	2,425	34.6
Woonasquatucket River Basin	0	61	68	56	4,632	4,817	185	3.8

Statewide	240	10,890	4,528	2,423	93,747	111,828	18,081	16.2
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*Non-Governmental Organizations e.g. Audubon Society of Rhode Island, The Nature Conservancy, etc.

(Data are based on interpretation of 1988 1:24,000-scale panchromatic aerial photographs and stored in the Rhode Island Geographic Information System (RIGIS); minimum map unit = 1/4 acre. Values include wetlands and deepwater habitats as defined by Cowardin et al. (1979).)

Wetlands Protection Measures

Federal, state and local governments and private sector organizations all also play a role in protecting wetlands. Protection measures utilized in Rhode Island include federal and state regulation of alterations to wetlands, acquisition of land (and interests in land) connected to wetlands, programs to restore degraded wetlands, and efforts to educate and involve the public in the protection of wetlands.

Regulatory Programs

State wetlands protection regulations administered by the Rhode Island Department of Environmental Management (DEM) and the Coastal Resources Management Council (CRMC) play the most important regulatory role in protecting Rhode Island's freshwater and coastal wetlands.

Despite the broad authority granted under section 404 of the Clean Water Act, wetlands protection through federal regulation has been constrained by Court challenges and varying administrative interpretations over time. Nationally, there has been a substantial loss of wetlands under the regulatory jurisdiction of the federal government. According to a U.S. Fish and Wildlife Service report², the estimated total loss of wetlands nationally, from 1986 to 1997 was 644,000 acres. A Federal Supreme Court decision in 2001 limited the scope of the Clean Water Act's jurisdiction over isolated wetlands and the EPA has recently proposed rules that reduce the Army Corps of Engineers control of permitting for about 20 percent of the nation's wetlands. When states do not assert specific jurisdiction over isolated wetlands the federal law applies, and thus would not protect isolated wetlands from being filled and developed. Rhode Island's Freshwater Wetlands Act gives DEM jurisdiction over isolated wetlands.

Rhode Island's Freshwater Wetlands Act, Chapter 2-1 of the General Laws, is one of the oldest and strongest state wetlands protection measures in the nation. DEM's Office of Water Resources operates the freshwater wetlands regulatory program, which seeks to protect and restore wetlands to provide wildlife habitat, reduce floods, improve water quality, and provide recreational opportunities. The technical and public review of development proposals provided for under this regulatory program have been largely responsible for Rhode Island's avoidance of the substantial wetlands losses which other states have experienced in recent years. Freshwater wetlands losses in the state as a result of permitted alterations have been kept to a minimum, for example only 2.1 acres were altered in 2000. Unauthorized alterations are still a problem however, with 17.4 acres of unauthorized wetland, river, and stream alterations and 10.8 acres of unauthorized perimeter, riverbank, and floodplain alterations occurring in 2001. DEM's Office of Compliance and Inspection is responsible for restoring many freshwater wetlands that have been altered without authorization from the Office of Water Resources, thereby ensuring wetland conservation after an alteration.

² U. S. Fish and Wildlife Service. Status and Trends of Wetlands in the Conterminous United States 1986 to 1997. 2000.

Saltwater wetlands in Rhode Island are regulated by the Coastal Resources Management Council. Established by Chapter 46-23 of the Rhode Island General Laws, it is a seventeen member body given a broad legislative mandate for coastal resource planning, management, and regulation. The CRMC has jurisdiction over all construction, filling, removal, and grading within 200 feet of the coast and of coastal features, as well as over moorings, docks, dredging, and other activities through its permitting program. Under the Coastal Resources Management Program, the Council's regulatory document, uses of shoreline areas are regulated according to the characteristics of the resource involved and the intensity use designation of the adjacent coastal waters.

Since about 90 percent of the state's salt marshes are adjacent to waters having the two lowest intensity usage categories, or have been designated as areas for preservation and restoration, only minor alterations to most of the state's saltwater wetlands are permissible. Only about 37 acres of saltmarsh statewide are located adjacent to higher intensity water classes where significant alterations could be allowed. CRMC has adopted a saltwater wetland mitigation policy.

Amendments made in the early 1990s to the state's Local Zoning and Subdivision and Land Development Review enabling statutes gave municipalities authority to use modern land use techniques to control the use of wetlands and of land surrounding and affecting wetlands. While 37 of the state's 39 municipalities had included provisions for protecting wetlands, watercourses, or floodplain areas within their local land use regulations as of 2000³, no systematic evaluation of the effectiveness of these measures has been undertaken. While municipal land use regulation can be an important complement, state wetlands regulatory authority remains the primary defense of important wetland values.

Acquisition Programs

Acquisition of wetlands is also a significant protection measure in Rhode Island. DEM's Planning and Development Section operates the State Land Acquisition Program, in cooperation with the Divisions of Fish & Wildlife, and Forest Environment. The Program coordinates State land protection projects, which may include both purchase of land and purchase of development rights. DEM's land acquisition efforts are guided by *Protecting Our Land Resources* (1996), DEM's strategic plan for implementing the State's *Greenspace and Greenways Plan*, State Guide Plan Element 155⁴. The Land Acquisition Program uses criteria set by the Natural Heritage Program, whose goals of protecting representative areas of all native ecosystem types and maintaining viable populations of all native species do ensure that wetlands are an important part of the program.

In addition to State acquisition, municipalities, local land trusts, and major non-profit land conservation organizations such as The Nature Conservancy, the Audubon Society of Rhode Island, and the Trust for Public Land have taken on much greater importance in land protection efforts in recent years. The State, through its land acquisition grant programs, has partnered with local governments and private conservation group in many projects that provide protection to wetlands.

Funding sources utilized by Rhode Island for wetlands acquisition include federal funding from the Sport Fish and Wildlife Restoration Program, Department of Agriculture farmland acquisition

³ RI Statewide Planning Program. Inventory of Local Zoning and Land Development Provisions. 2001.

⁴ R.I. Division of Planning. A Greener Path: Greenspace and Greenways for Rhode Island's Future. State Guide Plan Element 155. 1994

program, the Land and Water Conservation Fund, and the North American Wetlands Conservation Act. While the North American Wetlands Conservation Act is the one source of funding that is specifically targeted to wetland acquisition, other sources also contribute to wetland conservation. For example, because forested wetlands are by far the most common wetland type in Rhode Island, projects funded under the Forest Legacy Program typically include extensive wetland areas. State funding for land protection is provided via the State Capital Development Program, which includes proceeds from a number of bond issues including the 2000 Open Space and 1998 Greenways Bonds. Supplementing federal and state funding for land acquisition have been substantial charitable (private foundation) contributions.

Wetlands Restoration

In addition to conserving high quality wetlands, the restoration of the values and functions of degraded wetland systems has become an important goal for Rhode Island in recent years. The State's Greenspace and Greenways Plan⁵ called for restoring 100 acres of degraded wetlands per year. In 2002 the RI General Assembly established the Coastal Habitat Restoration and Trust Fund to fund restoration of three types of marine habitat: salt marshes, eelgrass, and fish runs with funds from the Oil Spill Response Fund. Other efforts include:

- Identification by URI and DEM of 136 freshwater restoration sites in the Woonasquatucket watershed and outreach to landowners to discuss restoration opportunities.
- The Rhode Island Corporate Wetlands Restoration Project, initiated in 2001 as part of the national organization, is led by Narragansett Electric Company and Environmental Science Services. It has committed \$30,000 to the restoration of Lonsdale Marsh and \$25,000 to the Pawtuxet River Fish Restoration project. It is actively seeking to raise funds from various Rhode Island businesses.
- The Narragansett Bay Estuary Program (NBEP), a component of DEM, works with the CRMC, municipalities, and non-profit groups to identify coastal wetland restoration opportunities, prioritize those wetlands, and obtain funding for restoration.
- Local watershed organizations -- while a number of watershed groups have been in existence for many years they primarily focused on a particular waterbody. Beginning in the mid-1990's watershed associations began taking a more formal and active role in planning and advocating for resource protection. Under the Rhode Island Rivers Council Act, seven local watershed associations (as of 2002) have been formally recognized by the Rhode Island Rivers Council, and with support from DEM's Watershed Program, a number of these groups have begun developing watershed-wide action plans that include wetlands protection and restoration.

Wetland Conservation Priorities

While Rhode Island is committed to the protection of all its wetland resources, realistically, priorities must be established to direct conservation investments. The Rhode Island Natural Heritage Program provides valuable information used to identify priority wetland types and areas in Rhode Island⁶. The Natural Heritage Program has identified more than 50 natural community types in the state, eight of which are considered to be unique in the state and region and are therefore important conservation priorities. The eight community types may be found within the seven bioregions of Rhode Island that contain biological features of critical importance to maintaining the state's biodiversity. Among the eight community types unique to

⁵ Ibid. p. 8.6

⁶ R.I. Department of Environmental Management, Natural Heritage Program. Rhode Island's Living Legacy: Identifying and Preserving the State's Biodiversity (draft report).

Rhode Island, the following six types are wetland communities, and are therefore important conservation priorities:

1. Open peatlands (bogs and fens) – includes wetlands with less than 50% canopy cover of trees, the dominant vegetation being shrubs, herbs, and mosses.
2. Atlantic White Cedar swamps – an evergreen or mixed swamp occurring on organic soils in poorly drained depressions, occasionally along streams.
3. Freshwater pond shores that support coastal plain species – the gently sloping sandy-gravelly shores of ponds in morainal kettle holes and depressions in glacial outwash plains within the coastal region.
4. Floodplain forests – hardwood forest in mineral soils on low terraces of river floodplains characterized by a flooding regime in which low areas are flooded annually, usually in the spring; higher areas are flooded irregularly.
5. Sea level fens – rare community type that develops in the upper border of tidal marshes receiving fresh groundwater seepage. The best RI example is found on the inland side of a coastal pond that receives freshwater percolating from the adjacent moraine.
6. Freshwater tidal marshes – very rare marsh communities occurring at the upper limits of tidal flow along streams and rivers.

Map X: Bioregions of Rhode Island

Several State efforts underway will further inform and refine wetlands conservation priorities in the future. DEM's Office of Water Resources has begun to develop a statewide freshwater wetlands conservation plan. A companion coastal wetlands protection and restoration plan that is also underway, led by CRMC. These plans are being developed with other State agencies, municipalities, and nonprofit organizations such as Save the Bay. When completed, these plans will provide comprehensive, coordinated wetlands conservation strategies and priorities for Rhode Island.

The following excerpts are from the unpublished *Rhode Island's Living Legacy*. The seven Biodiversity Focus Areas and strategies for protection through acquisition, easements, and management include various types of wetlands.

1. Western Forest

The western interior contains the largest tracts of forest habitat in the state. Included are several large State-owned Management Areas (Buck Hill, George Washington, Durfee Hill, Nicholas Farm, Arcadia, and Rockville), and most of the land in the Scituate Reservoir Watershed. The continuity of the primarily forested landscape in this focus area provides the spatial requirements of a number of species that rely on large habitat tracts. Species of particular interest in this focus area include birds, especially neotropical migrants which are also forest-interior specialists, some found nowhere else in the state. Additional fauna includes such forest dependent and/or wide-ranging animals as bobcat and fisher, for which population and status information is very limited but evidence suggests the presence of both within larger habitat tracts.

Strategy: All potential land acquisitions in excess of 150 acres in the Western Forest focus area should be actively pursued. Acquisition of parcels less than 150 acres should be considered on the basis of identification of specific habitat value, or the potential for physically adding to and/or connecting existing large protected forest tracts.

2. Pawcatuck River

The high diversity and quality of wetland habitats, including coastal plain ponds, bogs, fens, floodplain forests, white cedar swamps, and rivers in the Pawcatuck River watershed supports more than 60 percent of the state's populations of rare plants and animals, including those listed under the regulatory authority of Federal and State Endangered Species laws. In addition, large managed areas (Great Swamp, Burlingame, Carolina, and Audubon's Eppley Sanctuary) provide a basis for expanding the size of, and increasing buffers for, large protected habitats. The pristine riverine systems in the Pawcatuck watershed provide the best opportunities in the state for preserving aquatic communities and the species they support in a presently healthy system. Many of the state's other waterways have been heavily impacted by damming, pollution, and other forms of degradation with a consequent decline aquatic species composition and vigor.

Strategy: All potential land acquisitions in this focus area, regardless of size, should be actively considered based on their contribution to the unique biodiversity values of the Pawcatuck River Watershed. Decisions regarding acquisitions and use of available funding sources should focus on these unique values of the Pawcatuck rather than public active recreational potential.

3. South Coastal

Included within this area are the many unique ecosystems associated with the coast including beaches, dunes, salt marshes, salt ponds and shores, and upland maritime shrub lands. Several large protected areas exist here (including federal Fish and Wildlife refuges, Charlestown Beach, Napatree Point, etc.) and most sites receive some regulatory protection.

Strategy: Concentration on land acquisitions in the South Coastal area should be based on protection of coastal habitats, low-impact recreational objectives, and elimination of sources of pollution to the coastal ponds. Land parcels may be of any size, but should provide additional buffer for already protected areas, or unique opportunities to protect species and communities not already receiving sufficient protection.

4. Narragansett Bay

The principal interest in this region is the array of unique natural communities and other important biological features (most notably, colonial waterbird nesting sites). In general, there is a low occurrence of species considered rare on a regional scale, but there are several populations of state endangered species, most notably the Northern Diamondback Terrapin. Unique habitats include large tidal marshes (Hundred Acre Cove, Prudence Island, Jamestown Marsh Meadows, etc.) which are used as feeding areas by egrets and other wading birds nesting in Narragansett Bay, as well as large numbers of migrant shorebirds. Moreover, these estuaries are recognized as some of the most productive nurseries for aquatic fauna in the region. In addition, the Barrington/Runnins Rivers support the state's best examples of fresh/brackish tidal wetlands, a community type lost from most the state's other rivers.

Strategy: All land acquisitions on Prudence, Patience, and Dyer Islands should be actively considered with the goal being to permanently protect all remaining privately held open land on these islands. Land protection strategies, including acquisition, conservation easement, and regulatory methods, should also be directed to the Barrington/Runnins River estuary where exemplary tidal wetland communities still exist.

5. Blackstone Valley

Several wetland communities along the Blackstone River are significant examples of these types for Rhode Island, and also support diverse faunas. These areas include the Valley Marshes (shared by the municipalities of Central Falls, Cumberland, and Lincoln) and portions of remnant floodplain forest found between the Valley Marshes and Woonsocket.

Strategy: Acquisition should be considered for any lands contiguous to existing protected areas.

6. East Coastal

The biological values associated with the East Coastal region are similar to those of the South Coastal focus area. Significant natural communities are centered at the coastal salt pond complex in Little Compton (most notably at Briggs Marsh and Quicksand Pond) and include beaches, tidal marshes, and other estuarine types. The focus area boundary is extended north to include the watersheds for these coastal ponds.

Strategy: All potential land acquisitions (in excess of 10 acres) in the watersheds of the coastal ponds along the south shore of Little Compton should be considered.

7. Block Island

Block Island has traditionally received the benefits of a great deal of conservation work. What has been termed a “Last Great Place” by the Nature Conservancy supports a comparatively high number of regionally significant species, most notably the Federally listed American Burying Beetle, and also serves as a refuge for several species no longer extant on the mainland of Rhode Island. Among these are several nesting birds including the Northern Harrier and American Bittern.

Strategy: The State will continue to support The Nature Conservancy, Block Island Conservancy, Block Island Land Trust, and other regional and local conservation organizations that have taken an active participatory role in the protection of Block Island’s unique habitats.

Table 152-B(2) displays ten wetland types found in Rhode Island. The wetland types are arranged by watershed areas. In addition to the ten wetland categories in the table, one additional wetland type, riverine tidal open water, is found in the Woonasquatucket River basin. Seven acres of riverine tidal open water have been identified in the Woonasquatucket watershed.

Table 152-B(2)
Acreeage of Rhode Island's Freshwater Wetland Types (by watershed)⁷

Watershed	EMA	EMB	SSA	SSB	FOA	FOB	FOD	LOW	POW	ROW	Total
Blackstone River Basin	590	55	806	301	1,241	6,179	2	2,661	629	463	12,925
Blackstone and Millers Rivers Sub-basins	402	32	404	117	385	2,919	1	1,163	286	352	6,062
Branch River Sub-basin	90	0	126	12	132	1,092	0	252	141	84	1,929
Chepachet River Sub-basin	30	5	95	71	312	859	0	440	76	11	1,899
Clear River Sub-basin	68	19	181	102	412	1,308	1	806	126	16	3,037
Block Island Basin	147	0	189	0	0	0	0	26	167	0	529
Moshassuck River Basin	100	0	112	2	25	971	0	248	122	13	1,593
Narragansett Bay Basin	1,144	5	2,120	46	521	10,342	17	1,383	573	28	16,179
Annaquatucket River Sub-basin	65	1	126	0	17	648	7	174	43	0	1,082
Greenwich Bay Sub-basin	14	0	50	0	1	422	0	52	42	1	582
Hunt River Sub-basin	58	3	160	15	177	2,126	5	0	110	18	2,672
Kickemuit River Sub-basin	45	0	41	0	0	205	0	31	6	0	328
Maskerchugg River Sub-basin	16	0	20	0	1	455	1	0	31	0	524
Mount Hope Bay Sub-basin	32	0	68	0	31	254	0	1	19	4	408
Narragansett Bay Sub-basin	335	2	744	32	97	3,234	3	399	169	1	5,013
Providence River Sub-basin	36	0	87	0	5	601	0	128	78	3	938
Sakonnet River Sub-basin	541	0	824	0	193	2,386	1	598	70	0	4,612
Seekonk River Sub-basin	3	0	1	0	0	12	0	0	5	1	20
Pawcatuck River Basin	460	48	1,696	528	3,326	14,091	52	2,460	585	402	23,648
Chickasheen River Sub-basin	21	0	76	8	91	777	0	163	13	1	1,150
Chipuxet River Sub-basin	36	5	271	77	577	2,596	18	1,315	106	14	5,014
Pawcatuck River Sub-basin	340	41	1,192	385	2,036	7,984	32	931	327	362	13,629
Queen River Sub-basin	64	1	158	59	622	2,735	3	52	139	24	3,855

⁷ Ibid.

Table 152-B(2) con't

Watershed	EMA	EMB	SSA	SSB	FOA	FOB	FOD	LOW	POW	ROW	Total
Pawtuxet River Basin	672	53	1,389	457	2,309	12,036	25	6,566	911	479	24,897
Barden Reservoir Sub-basin	46	5	254	48	332	1,499	17	275	96	10	2,581
Big River Sub-basin	57	41	121	207	637	1,468	2	144	102	24	2,804
Flat River Reservoir Sub-basin	54	0	149	46	326	1,274	1	1,045	93	2	2,988
Moswansicut Reservoir Sub-basin	18	0	26	0	8	249	0	298	5	0	604
North Branch Pawtuxet River Sub-basin	45	0	86	25	48	1,073	4	52	105	99	1,536
Pawtuxet River Sub-basin	161	0	243	0	7	1,388	0	196	195	151	2,340
Pocasset River Sub-basin	119	0	139	3	18	1,137	0	303	84	20	1,823
Ponagansett Reservoir Sub-basin	2	1	3	3	13	60	0	240	2	0	323
Regulating Reservoir Sub-basin	40	0	106	21	56	1,246	0	257	80	2	1,807
Scituate Reservoir Sub-basin	68	4	146	31	178	1,850	0	3,307	47	0	5,630
South Branch Pawtuxet River Sub-basin	61	1	111	72	649	655	1	281	92	172	2,095
Westconnaug Reservoir Sub-basin	3	1	6	1	38	138	0	168	11	0	367
Pettaquamscutt River and Narragansett Shore	58	4	198	38	48	1,752	0	58	90	6	2,250
Point Judith Pond Basin	20	0	113	5	12	572	0	68	113	0	902
Quinebaug Basin (includes the Moosup River Sub-basin, Five Mile River Sub-basin, and the Pachaug River Sub-basin)	245	39	736	306	1,268	2,352	60	926	325	69	6,325
Saugatucket River Basin	27	0	74	8	32	1,809	4	365	65	12	2,395
Southeast Coastal Basin	364	0	682	1	67	2,690	32	23	88	1	3,949
Coastal Aquidneck Sub-basin	132	0	184	0	0	59	0	0	8	0	383
Little Compton Sub-basin	195	0	452	1	52	1,726	8	23	59	1	2,516
Westport River Sub-Basin	38	0	46	0	16	905	24	0	21	1	1,050
Southwest Coastal Basin	57	0	313	58	106	931	0	129	162	0	1,757

Table 152-B(2) con't

Watershed	EMA	EMB	SSA	SSB	FOA	FOB	FOD	LOW	POW	ROW	Total
Taunton River Basin	26	0	59	1	117	538	1	489	4	0	1,234
Ten Mile River Basin	26	0	41	0	0	165	0	273	21	43	568
Warren River Basin	89	0	146	0	0	598	0	0	23	3	859
Barrington River Sub-basin	8	0	19	0	0	180	0	0	12	0	219
Palmer River Sub-basin	23	0	41	0	0	157	0	0	3	0	224
Runnins River Sub-basin	39	0	39	0	0	164	0	0	5	3	249
Warren River Sub-basin	20	0	48	0	0	97	0	0	3	0	168
Wood River Basin	113	24	680	238	1,535	2,894	33	988	302	197	7,002
Woonasquatucket River Basin	203	2	249	73	294	2,765	0	856	282	89	4,810
Statewide	4,340	229	9,602	2,060	10,900	60,684	225	17,518	4,460	1,803	111,828

Wetland Types

EMA	Emergent Wetland: Marsh/Wet Meadow	FOB	Forested wetland: Deciduous
EMB	Emergent Wetland: Emergent Fen or Bog	FOD	Forested wetland: Dead
SSA	Scrub-shrub Wetland: Shrub Swamp	LOW	Lacustrine Open Water (Lake)
SSB	Scrub-shrub Wetland: Shrub Fen or Bog	POW	Palustrine Open Water (Pond)
FOA	Forested wetland: Coniferous	ROW	Riverine Nontidal Open Water

(Data are based on interpretation of 1988 1:24,000-scale panchromatic aerial photographs and stored in the Rhode Island Geographic Information System (RIGIS); minimum map unit = 1/4 acre.)

Major Accomplishments

The establishment of the Rhode Island Habitat Restoration Team and web-based coastal habitat restoration tools is helping with habitat restoration planning. Watershed Councils under the auspices of the Rhode Island Rivers Council have completed five Watershed Action Plans, and a draft of one more.

Over 1,500 acres of land with significant portions of wetland have been acquired through North American Wetlands Conservation Act funding since 1997. The effectiveness of the freshwater wetlands program has been significantly enhanced by the adoption of the recommendations of the Wetlands Task Force. These include the 2002 amendments to the regulations defining water quality improvement projects and habitat restoration projects and setting application fees for these projects. Other improvements include:

- 1994 – adoption of a wetlands mitigation hierarchy to (1) avoid wetland alteration entirely, (2) minimize wetland impacts, (3) restore and maintain disturbed wetland areas. The objective of the hierarchy is to achieve no net loss of wetlands. Another regulation amendment allowed use of soil types to indicate hydrology. Wetland regulations define wetlands by vegetation and hydrology.
- An intense technical assistance and outreach program that has significantly improved understanding of the regulations and has helped to improve the quality of applications.

- Pre-permitting meetings early in the planning phases of projects to explain the regulatory process and provide wetlands avoidance and minimization recommendations.
- Streamlined permitting that has reduced process time by nearly half and reduced fees for beneficial projects.
- A computerized data tracking and information management system for wetlands and septic system permit. DEM is integrating this system with its water quality certification process.
- Coordinated review for ISDS (septic system) applications for residences next to wetlands.
- A memorandum of agreement between DEM and CRMC that clarifies the responsibilities of the two agencies regarding freshwater wetlands in the vicinity of the coast.

DEM also implemented many of the recommendations of the Stormwater Management Task Force and the Individual Sewage Disposal Task Force that play a role in wetlands protection.

URI and DEM developed a statewide Freshwater Wetland Restoration Strategy with EPA funding to identify and prioritize wetlands for restoration with the University of Rhode Island and EPA. The University, DEM, and EPA then developed a Wetland Restoration Plan for the Woonasquatucket River Watershed that applies the methods developed in the above strategy.

DEM developed the designation of Special Resource Protection Waters for waterbodies to receive protection for reasons in addition to meeting the highest water quality criteria. These waterbodies, which reflect factors such as drinking water supplies, and containing critical habitat, are listed in Appendix D of the DEM Water Quality Regulations under Rule 18. Antidegradation of Water Quality Standards, Tier 2½, Protection of Water Quality for SRPWs. DEM is conducting a triennial review of the Water Quality Regulations that will be available at www.state.ri.us/dem.

In 2002, the RI General Assembly established the Coastal Habitat Restoration and Trust Fund to fund restoration of three types of marine habitat: salt marshes, eelgrass, and fish runs. DEM developed a Wetlands Conservation Plan for Tiverton and Little Compton with The Nature Conservancy. DEM, NBEP, CRMC, Sea Grant, EPA, NOAA, U.S. Fish and Wildlife, and Save the Bay published an Atlas of Narragansett Bay Coastal Habitat Areas.

DEM and partners updated a coastal wetland (including eelgrass) inventory of Narragansett Bay using 1996 aerial photography and completed an inventory of potential coastal wetland restoration sites, surrounding land uses, and hard shorelines in Narragansett Bay. Baseline data from the above two studies is also being used to conduct coastal wetland and buffer zone trends analysis that will show areas lost or experiencing major classification changes (both natural and human induced) between the 1950's and 1990's, and in selected areas since the 1930's.

In 1999 new aerial photographs of the southern Rhode Island were taken to map the remainder of the state's coastal wetlands. The inventory is near completion. All of the data from these projects is or will be available through the RI Geographic Information System.

Environmental Science Services, Narragansett Electric Company, Arch Chemicals, Battelle, and Applied Science Services joined with EPA, U.S. Army Corps of Engineers, DEM, and Save the Bay to establish the Corporate Wetlands Restoration Project.

2003-2008 Action Agenda

- DEM has begun research to coordinate the wetland protection efforts of the DEM Fish and Wildlife Division, the Natural Heritage Program, the Land Acquisition Program, the Wetlands Regulatory Program, municipalities, and nonprofits through development of a statewide freshwater wetlands conservation plan.
- CRMC, the Narragansett Bay Estuary Program, and partners are coordinating coastal wetlands conservation through development of a comprehensive coastal wetland protection and restoration plan.
- RI will continue to provide both the freshwater and coastal wetland regulatory processes with resources and professional staff sufficient to execute their protection mandates in a thorough and efficient fashion.
- DEM will continue to provide the technical assistance and educational outreach efforts to the development community and other interested parties on wetland avoidance methods and development impact minimization for wetlands-associated development acceptable under the Freshwater Wetlands Program's regulations. The publication *What's the Scoop on Wetlands*, recommending procedures for minimizing adverse effects of development activities upon wetlands, will continue to be made available through DEM's Office of Water Resources.
- RI will use the CRMC saltwater wetland mitigation policy as a basis to develop clear guidance for how brownfields and historical sites are redeveloped.
- State agencies should encourage communities to adopt land management regulations for their floodplains which exceed the minimum requirements of the National Flood Insurance Program.
- State and local agencies should assess the impacts associated with sea level rise, and address these impacts in permitting and project design decisions.
- The state should develop contingency plans for the acquisition of floodplain properties damaged or destroyed by severe floods.
- The state should consider legislative efforts to establish a hurricane trust fund for the acquisition of storm damaged properties.
- The state should continue protect to floodplains through acquisitions related to linear parks and greenways.